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ABSTRACT

Differences between Ricks College students taking a study skills course and a control group were assessed, with attention to the difficulty of students' semester load and credit load, and grades. Data on students applying for graduation in 1983 were analyzed by semester. Over four semesters, difficulty of courses was similar for both groups of students on both total load and per credit load. For both groups of students, the average course grade was higher for a second semester course than for a first semester course. Compared to nonparticipants, students who completed the study skills course had higher achievement while taking the study skills course and had lower achievement during the semester following the study skills course. During the fourth semester, the study skills group took significantly more difficult classes per credit than did the control group. It is concluded that the difficulty of courses selected by students is not related to lower achievement following the study skills course. Areas that might be pursued in further research include course content and reasons for taking the study skills course. (SW)

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The Ricks College Study Skills Course: Its Relationship to Difficulty of Selected Courses and Achievement

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Abstract

Records of seventeen treatment and twenty nine control students applying for graduation from Ricks College in May, 1983, were examined and transformed using average course grade, credits, withdrawal rate of the courses, and student grades. Four dependent variables were formed: 1) difficulty of student load, 2) difficulty per credit, 3) achievement adjusted for difficulty, and 4) per credit achievement adjusted for difficulty. These data were then analyzed over semesters for differences between the groups. An analysis of variance showed that over all semesters, there was no significant difference in the difficulty of the courses taken between the groups. The difficulty of courses for both groups was shown to decrease over semesters ($p < .001$), indicating that grades got higher for both groups. A *t* test of change between semesters on the variables showed that compared to the control group, the students who took the study skills course, 1) selected more difficult courses per credit during semester four compared to semester three ($p < .01$), 2) increased more in achievement ($p < .05$) during the semester in which the study skills course was taken, 3) increased less in achievement ($p < .05$) during the semester after taking the study skills course, and 4) showed a nonsignificant trend ($p < .10$) toward comparatively higher achievement during the fourth semester. Difficulty of courses selected was ruled out as the reason for observed lower increases in achievement following the study skills course. Further research is urged.

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Of the 2000 freshmen at Ricks College, 59% request help in study skills and have ACT scores which indicate need for study skill development. The Ricks College Study Skills Lab was established in 1981 to fill this need. Its development was spurred by the success of the study skills course developed previously (Timothy, Note 1). The course had consisted of lecture/discussion and assignments along with several modules which were assigned by student need and desire. In the lab, the modules were expanded and made independent of the course. The course was then revised to summarize the modules.

Evaluation of the study skills course and modules is an ongoing process. Several projects have been developed to gather different kinds of information about the program. The present study is one of those projects.

Previous research (Timothy, Note 2) suggested that students tended to do better in GPA while they were taking the study skills course than before the course, but later return to lower GPA levels. Such a finding is contrary to the purpose of the course, and provokes questions about course effectiveness. Several reasons for such findings may be hypothesized: 1. The study skills course may be ineffective in the long term. Tillman (1952) reviewed 31 studies and found that 23 of those found statistically significant gains in GPA associated with training. It was not clear that gains were lasting, however, and few of the studies reported data for other semesters. GPA was not encouraged as a sufficient indicator of gain in reading courses. 2. A course in study skills might provide pressure and some

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encouragement to improve grades. Such pressure would be likely to discontinue with the class. And so would the improvements. 3. The taking of the course may correspond with an individual decision to expend extra effort in school work and achievement. Such a commitment would lead to higher grades as well as taking the course. Since such a commitment may be made for a semester at a time, it may not be renewed after the course is completed. 4. A period of adjustment may occur at the end of the course in which a student might experiment with ideas learned in the course. Such experimentation might lead to decreased GPA during the semester immediately following the course. It would also be likely to lead to increased GPA in later semesters when the student's experiments produce adoption of the habits which aid study. When the student's experiments produce adoption of habits which interfere with achievement, on the other hand, further decreases in GPA would be likely. 5. Students may register for more difficult courses after having taken the course, resulting in lower grades. This possibility was selected for examination in the present study.

Difficulty of courses is associated with factors such as student work load, including employment and other activities, relationship of the course to major, changes in registration, competition in the course, the number of credits given for a course, the average grade in the course, and the proportion of enrolled students who withdraw from the course before it ends.

For the purposes of the present study, these last three factors: credits, average grade, and withdrawal rate, were

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determined to be the most available and reasonable estimates of course difficulty.

Questions to be Addressed

The present study attempted to identify patterns in the difficulty of student course load, and in student grades adjusted for course difficulty for both study skills students and a control group. Specific questions addressed include how students who have taken this study skills course compare with the students who have not completed this course in 1. the difficulty of semester load and per credit load difficulty; 2. grades adjusted for difficulty and adjusted per credit grade; 3. semester to semester changes in the above comparisons; and 4. The relationship of GPA changes to course difficulty to any changes in grades?

Methodology

Subjects

Since attrition could make it impossible to identify patterns in load difficulty and achievement over semesters, subjects for the study were selected from students who applied for graduation from Ricks College. The May, 1983 list was used. Treatment groups were those students who took the Study Skills course during the Spring semester of 1982. All treatment subjects were used due to the small number that took the class that semester that were also on the graduation list. Control subjects were selected by generating random numbers on an Apple* computer and matching those numbers to the number of the students on an alphabetical graduation list. Subjects were used only if

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they were in attendance the four regular Fall and Spring semesters prior to the graduation application.

Procedure and Instrumentation

School records were examined for each subject for each fall and spring semester. Course difficulty was calculated by means of formulas devised for this study. No similar studies were located in a search of the literature. Course difficulty (D) was calculated by the formula:

$$D = C * (P-(A * W))$$

where C represents the number of credit hours given for the course; P represents the highest possible average grade (4.0); A represents the average grade given in that section of the course that term, and W represents the drop-out rate for the course. W was calculated by the formula:

$$W = F/R$$

where F represents the number of students getting a grade for the course and R represents the number of students registered for the course after the official rolls were distributed. Some courses had more students complete the course than were on the official roll. Since a W greater than 1 would be inappropriate, W was set equal to 1 in these cases. Course difficulty was then summed for each student for each semester to get the difficulty of student semester load.

The per credit load difficulty (D2) was calculated by:

$$D2 = \Sigma D / \Sigma C$$

that is, the sum of the course difficulty for the semester was divided by the sum of the credits for that semester.

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The achievement adjusted for difficulty was calculated by summing the course achievement scores (I) for the semester using the formula:

$$I = \Sigma (C * D)$$

where C represents the student's course grade for the course, and D represents the course difficulty. The per credit achievement adjusted for difficulty was calculated by

$$I2 = \Sigma I / \Sigma C$$

dividing the summed achievement adjusted for difficulty (I) by the sum of credits (C) taken that semester.

An analysis of variance was performed for the differences across semesters. The differences between semesters were compared by t-tests.

Results and Discussion

No significant difference was found between those who took study skills and those who did not on any of the measures when all four semesters were included and an analysis of variance was used. Difficulty of courses were similar for all students over the long term on both total load and per credit load. Apparently, college and department requirements restrict student choices over the two year period.

For both control and treatment groups, the difficulty of courses decreased over semesters ($p < .001$). That is, the course average grade was higher for a second semester course than it is for a first semester course, and higher for a forth semester course than for a third.

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Examination of figures 1 and 2 will show that there was a difference as to when the major changes in difficulty occurred between those who took the study skills course and those who did not. The study skills group changed more between semesters two and three, while the control group changed more between semesters one and two and between semesters three and four.

Changes between semesters were significantly different for the treatment and control groups as shown by t-test results. During the fourth semester, the study skills group took significantly ($p < .01$) more difficult classes per credit than did the control group. The total load also tended to be more difficult, but not significantly ($p < .10$).

There was both a significantly greater improvement ($p < .05$) during the semester of the course, and a significantly greater decrease ($p < .05$) in achievement adjusted for difficulty between semesters two and three for the study skills group over the control group on total load. The per credit achievement adjusted for difficulty showed the decrease between semesters two and three, but not the increase between semesters one and two. This achievement measure also showed a trend toward recovering from the achievement decrease during the fourth semester that did not reach significance ($p < .10$).

Conclusions

It may be concluded that the decrease in achievement seen in semester three, following the study skills course is not due to greater difficulty of courses taken. An examination of Tables 1 and 3 will show that in the third semester, when the achievement

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dropped, the change in difficulty was not significant. In the fourth semester, when per credit difficulty was greater for the study skills group, the achievement adjusted for difficulty did show some gains. The gains were in achievement should have been greater, however, considering the increased difficulty. While the gains are not clear nor satisfactory, one cannot completely eliminate the difficulty as a factor in the fourth semester.

The implications of these data clearly require further research on course content, reasons for differences as perceived by the students, teachers, and perceived effects on decisions made by students.

More thorough evaluation of course content is recommended. It is possible that the study skills content could be bolstered to make the gains obtained by taking the course more lasting, or to speed up choice making by students.

It is possible that the taking of the study skills course and the encouragement and support of the class and teacher are needed by some students. Experiments should be done to determine the impact of encouraging study skills students to continue taking the study skills course or the study skills modules in other semesters as follow-up.

Interviews could reveal more about the reality of possible experimentation with study skills and the expected polarizing effects it might have. Interviews could also reveal more about the relationship between decisions about study habits and changes in grades as well as how such decisions relate to the taking of the study skills course.

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Such studies could provide better guidance for program structuring and content selection, for selection of students for the program, and for selection of further evaluative studies.

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Table 1.

T tests of Differences Between Control and Treatment Groups:

Semester Changes on Load Difficulty

SEMESTERS	TREATMENT		CONTROL		T	p
	M	s	M	s		
1-2	.168	6.800	3.013	6.391	-1.40	<.10
1-3	2.172	6.653	3.199	7.042	- .49	n.s.
1-4	2.172	6.653	3.199	7.042	-1.57	<.10
2-3	2.002	4.982	.186	7.078	1.02	n.s.
2-4	2.729	5.740	2.949	6.591	- .12	n.s.
3-4	.727	5.178	2.936	5.841	-1.33	<.10

Note: Treatment N = 17; Control N = 29.

Table 2.

T tests of Differences Between Control and Treatment Groups:

Semester Changes on Per Credit Load Difficulty

SEMESTERS	TREATMENT		CONTROL		T	p
	M	s	M	s		
1-2	.183	.268	.151	.313	- .35	n.s.
1-3	.199	.309	.266	.382	.62	n.s.
1-4	.397	.296	.285	.341	-1.13	n.s
2-3	.016	.266	.115	.222	1.36	<.10
2-4	.214	.290	.134	.250	- .99	n.s.
3-4	.199	.256	.020	.248	-2.335	<.01

Note: Treatment N = 17; Control N = 29.

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Table 3.

T tests of Differences Between Control and Treatment Groups:

Semester Changes on Achievement X Load Difficulty

SEMESTERS	TREATMENT		CONTROL		T	p
	M	s	M	s		
1-2	-4.634	24.014	6.388	18.522	-1.63	<.05
1-3	3.358	19.077	5.569	19.768	- .37	n.s.
1-4	9.900	20.758	13.908	22.543	- .61	n.s.
2-3	7.993	15.392	- .820	20.235	1.36	<.05
2-4	14.535	20.813	7.519	18.830	1.14	n.s.
3-4	6.542	18.295	8.339	20.889	- .31	n.s.

Note: Treatment N = 17; Control N = 29.

Table 4.

T tests of Differences Between Control and Treatment Groups:

Semester Changes on Per Credit Achievement X Load Difficulty

SEMESTERS	TREATMENT		CONTROL		T	p
	M	s	M	s		
1-2	.111	1.045	.390	.828	- .94	n.s.
1-3	.590	.954	.307	.942	.98	n.s.
1-4	.812	1.246	.914	.986	- .35	n.s.
2-3	.479	1.135	-.081	.750	1.815	<.05
2-4	.661	1.155	.521	.863	.43	n.s.
3-4	.181	.890	.607	.906	-1.56	<.10

Note: Treatment N = 17; Control N = 29.

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Table 5.

Averages of Control (C) and Treatment (T) Groups

by Semesters

SEM	GROUP	DIFFICULTY		ADJUSTED ACHIEVEMENT	
		LOAD	PER CREDIT	LOAD	PER CREDIT
1	T	21.251	1.544	55.610	4.138
	C	23.300	1.497	65.412	4.205
2	T	21.177	1.394	60.244	4.027
	C	20.284	1.314	59.020	3.815
3	T	19.140	1.279	52.251	3.547
	C	20.098	1.299	59.844	3.898
4	T	18.413	1.259	45.709	3.366
	C	17.162	1.100	51.505	3.291

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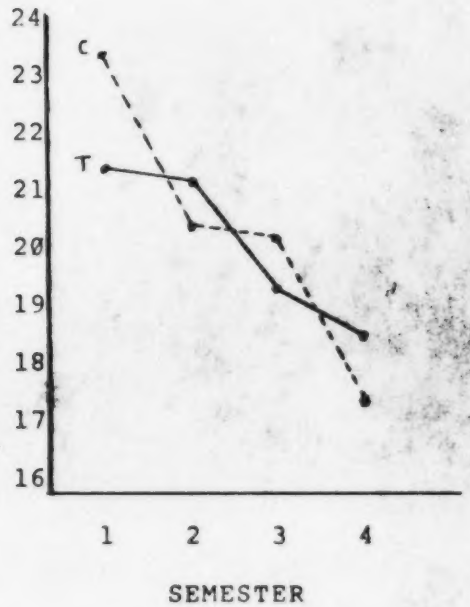

Figure 1. Average Difficulty of Load Plotted by Semester.

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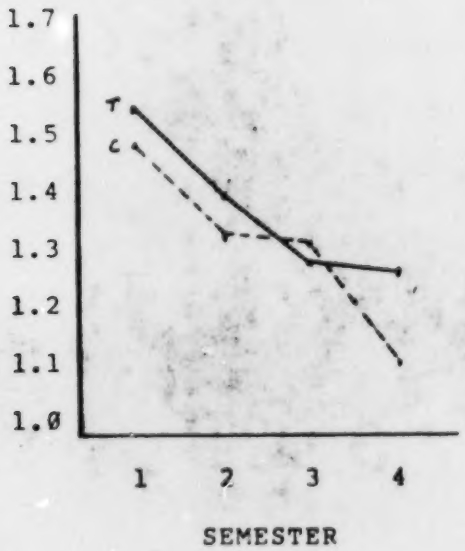

Figure 2. Average Difficulty Per Credit Plotted by Semester

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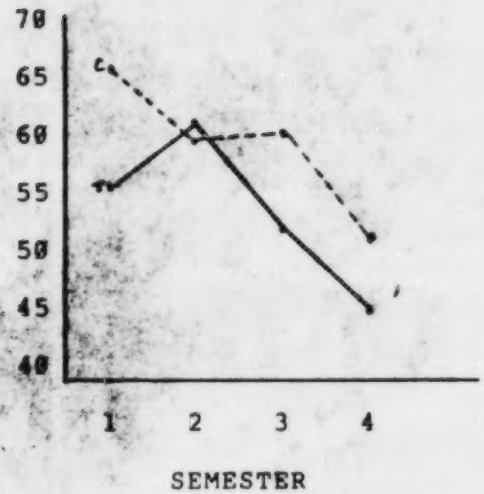

Figure 3. Average Achievement Adjusted for Difficulty Plotted by Semester.

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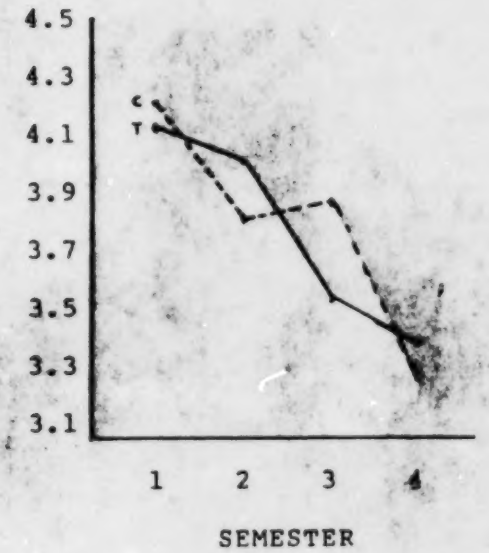

Figure 4. Average Per Credit Achievement Adjusted for Difficulty Plotted by Semester.

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